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Towards a human-like approach to path finding

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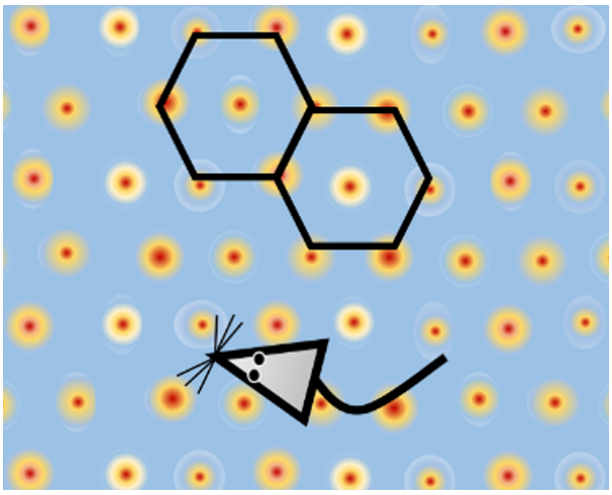

Path finding for autonomous agents has been traditionally driven by finding optimal paths, typically by using A* search or any of its variants. When it comes to simulating virtual humanoids, traditional approaches rarely consider aspects of human memory or orientation. In this work, we propose a new path finding algorithm, inspired by current research regarding how the brain learns and builds cognitive maps. Our method represents the space as a hexagonal grid with counters, based on brain research that has investigated how memory cells are fired. Our path finder then combines a method for exploring unknown environments while building such a cognitive map, with an A* search using a modified heuristic that takes into account the cognitive map. The resulting paths show how as the agent learns the environment, the paths become shorter and more consistent with the optimal A* search. Moreover, we run a perceptual study to demonstrate that the viewers could successfully identify the intended level of knowledge of the simulated agents. This line of research could enhance the believability of autonomous agentsïż½ïż½ïż½ path finding in video games and other VR applications.

http://dx.doi.org/https://doi.org/10.1016/j.cag.2021.08.020